

REMARKS

This is in response to the Office Action dated March 15, 2004. Claims 1-3 and 5-9 are pending.

Claim 1 stands rejected under 35 U.S.C. Section 103(a) over alleged Admitted Prior Art (APA – see JP 1-289289) in view of Horie. This Section 103(a) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires that "an Si film having a film thickness of 40 Å or less formed between the at least one light emitting end surface and the oxide protective coating the semiconductor laser device includes an active layer comprised of GaAlAs, wherein said active layer is uniform with respect to absorption of an emission wavelength throughout its length including at respective end portions thereof." As explained in the instant specification, the active layer 53 is deposited in the same manner throughout its length, and oxygen is prevented from entering the layer at ends thereof due to the protective layer(s); thereby allowing the GaAlAs active layer to be uniform with respect to absorption of an emission wavelength throughout its length including at end portions thereof. For instance, appellant has surprisingly found that good results can be achieved as shown in Fig. 4 of the instant application by using the claimed structure recited in claim 1, as opposed to the non-uniform absorption structure of Horie.

The APA fails to disclose or suggest certain aspects of claim 1, such as an Si film having a film thickness of 40 Å or less formed between the at least one light emitting end surface and the oxide protective coating. Recognizing these deficiencies in the APA, the

Office Action cites to Horie. However, one of ordinary skill in the art would not have combined the APA and Horie as alleged in the Office Action for at least the following reasons.

Horie fails to disclose or suggest the aforesaid underlined aspect of claim 1. Horie discloses a light emitting device which, as shown in Fig. 1 of Horie, includes a-Si film 14 and a dielectric layer 15, 16 which may be of aluminum oxide. The essence of Horie's teaching is that the facets of the cavity are irradiated with plasma (so-called window structure). By such irradiation, a part of the constituting elements of the active layer in Horie in the vicinities of the facets are desorbed and the active layer becomes transparent to the emission wavelength in the vicinities of the facets. This non-uniformity is essential in Horie. Thus, it can be seen that in direct contrast with claim 1, Horie expressly requires that the active layer is much more transmissive to emission wavelengths in the vicinity of the end facets than at other locations. Horie achieves the desired *non-uniformity* of absorption by irradiating the facets of the active layer with plasma or the like (the so-called window structure) (e.g., Abstract, lines 11-12; col. 4, lines 12-17 and 44-58; and col. 18, lines 27-56). In fact, Horie states that this irradiation of the facets of the active layer to make them non-uniform with respect to absorption compared to the rest of the active layer is the entire "basis" of Horie's invention (col. 4, lines 52-59). Thus, it is clear that Horie fails to disclose or suggest "*an active layer comprised of GaAlAs, wherein said active layer is uniform with respect to absorption of an emission wavelength throughout its length including at respective end portions thereof*" as required

by claim 1. Indeed, Horie teaches the opposite of claim 1 by teaching that non-uniformity of the active layer is required at end portions thereof.

In Horie, in contrast to claim 1, it is critical that the active layer is much more transmissive to emission wavelengths in the vicinity of the end facets than at other locations. Exhibit 1 attached to the Response After Final filed October 1, 2003 includes Horie's Examples 1-2 and Horie's Comparative Examples 1-3. Comparing Horie's Examples 1-2 with Horie's Comparative Examples 1-3 as shown in Exhibit 1, it is clearly understood that the process of irradiating the facet with plasma (process for window structure) in order to cause the active layer to be more transmissive near the facets than at other areas is essential for Horie's invention. This is because Horie's Comparative Examples 1-3 have no window structure and thus (a) failed the accelerated life test, (b) had undesirable Ga-O/As-O on the facet, and (c) had undesirable band energy characteristics in the vicinity of the facets. The only way in which one of ordinary skill in the art would ever have modified Horie's test-failing Comparative Examples given Horie's teachings would have been to conform to the test-passing Examples which teach directly away from the invention of claim 1.

Moreover, Examples 1-7 of Horie all require such plasma irradiation to create the non-uniformity, whereas Comparative Examples do not and thus failed in the accelerated life test. Thus, Horie expressly teaches and requires that the plasma irradiation be used to create the essential and necessary non-uniformity. Again, Horie teaches directly away from the invention of claim 1 in that Horie teaches that it is critical to create non-

uniformity by using the window structure which is the opposite of the invention of claim 1.

In contrast with Horie, the invention of claim 1 uses a an active layer comprised of GaAlAs (as opposed to the undoped InGaAs used in Horie's Examples), wherein the active layer is *uniform with respect to absorption of an emission wavelength throughout its entire length including at respective end portions thereof*. Applicant has surprisingly found for example that good results can be achieved as shown in Fig. 4 of the instant application by using the claimed structure recited in claim 1, as opposed to the non-uniform structure of Horie.

It can be seen from the above that Horie teaches directly away from the invention of claim 1 because Horie teaches that it is critical to create non-uniformity by using the window structure. Horie cannot possibly anticipate or otherwise render the invention of claim 1 unpatentable. Moreover, one of ordinary skill in the art would never have modified Horie to meet this aspect of claim 1 because to do so would destroy the very "basis" of Horie's alleged invention which is to provide an active layer which is much more transmissive at ends thereof than at the central portion thereof.

Furthermore, one of ordinary skill in the art would never have modified a reference using Horie in a manner which did not require the critical and essential plasma radiating taught by Horie, because to do so would destroy the very "basis" of Horie's teaching. Thus, one of ordinary skill in the art would never have modified the APA in view of Horie without using the essential plasma irradiating taught as critical by Horie to

form the non-uniformity precluded by claim 1. To modify the APA in a manner to meet claim 1 is directly contrary to Horie's teachings and requirements, and thus would not have been done by one of ordinary skill in the art.

Claim 9 requires "an intermediate film comprising silicon having a thickness of 40 Å or less formed between the light emitting end surface of the chip and the protective coating comprising Al₂O₃; and wherein the semiconductor laser device includes an active layer comprised of GaAlAs, wherein said active layer is uniform with respect to absorption of an emission wavelength throughout its length including at respective end portions thereof." Again, the cited art fails to disclose or suggest this aspect of claim 9. One of ordinary skill in the art would never have modified the APA in view of Horie without using the essential plasma irradiating taught as critical by Horie to form the non-uniformity precluded by claim 9. To modify the APA in a manner to meet claim 9 is directly contrary to Horie's teachings and requirements, and thus would not have been done by one of ordinary skill in the art.

Claims 1 and 9 also stand rejected under Section 103(a) over Horie in view of Kawanishi. This Section 103(a) rejection is respectfully traversed for at least the following reasons. In particular, one of ordinary skill in the art would never have modified the APA in view of Horie without using the essential plasma irradiating taught as critical by Horie to form the non-uniformity precluded by claims 1 and 9. To modify the APA in a manner to meet claims 1 and/or 9 is directly contrary to Horie's teachings and requirements, and thus would never have been done by one of ordinary skill in the

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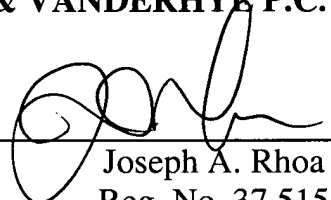
art. The art teaches directly away from the invention of claims 1 and 9 in at least this respect.

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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